Message

From: d'Almeida, Carolyn K. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9EC4401AFA1846DD93D52A0DDA973581-CDALMEID]
Sent: 3/16/2017 6:25:01 PM
To: Wayne Miller [Miller.Wayne@azdeq.gov]; Steve Willis [steve@uxopro.com]
Subject: FW: March 2017 BCT regulatory call
Attachments: ST012_EBR_Decision_Matrix.pdf

FYI

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"Because a waste is a terrible thing to mind..."

From: d'Almeida, Carolyn K.
Sent: Thursday, March 16, 2017 10:49 AM
To: Henning, Loren <Henning.Loren@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>; 'Dan Pope' <DPope@css-inc.com>; 'Brasaemle, Karla' <KBrasaemle@TechLawInc.com>; 'AKutty@TechLawInc.com' <AKutty@TechLawInc.com>; 'Cosler, Doug' <DCosler@TechLawInc.com>
Subject: FW: March 2017 BCT regulatory call

I just looked through the presentation: I'm not a modeler but the outline appears to touch on the basics of what would be included in a modeling effort without providing the meaty details. I am not sure that there is an actual biodegradation component in the model though; am I missing something? I am pleased to see a decision tree with intent to be applied to discrete areas which could lend itself to pilot testing and includes a box for considering an alternative remedy. What I do not see are any specific milestones or timeframe in the decision tree which will be critical to meeting the 20 year timeframe to meet benzene MCL in 20 years that would inform the decision points in the tree.

But at one point this was included (January 2014 Draft Final RDRA Work Plan) but I have not seen it since:

652
653 Table E-4.15 Predicted Maximum and Average Dissolved Benzene Concentrations
654 Following Sulfate-Reducing EBR

Hydrostratigraphic Zone	Date (month/year)	Predicted Benzene Concentration (µg/L)		Notes
		Average	Maximum	
Cobble Zone	04/2017	21	27	End of EBR Recirculation/TEA Addition
	04/2025	1.25	7.8	~8 years following EBR
	01/2031	0.68	0.95	~15 years following EBR
Upper Water Bearing Zone	04/2017	210	1,400	End of EBR Recirculation/TEA Addition
	04/2025	5.5	9.5	~8 years following EBR
	01/2031	1.0	3.3	~15 years following EBR
Lower Saturated Zone	04/2017	31	270	End of EBR Recirculation/TEA Addition
	04/2025	1.9	6.8	~8 years following EBR
	04/2031	0.64	2.8	~15 years following EBR

655 Notes:
656 ~ - approximately
657 µg/L – micrograms per liter
658 EBR – enhanced bioremediation
659 TEA – terminal electron acceptor
660
661 Immediately following sulfate-reducing EBR recirculation (Table E-4.15) the model predicts that
662 dissolved benzene concentrations are below approximately 27 µg/L in the CZ, 1,400 µg/L in the
663 UWBZ, and 270 µg/L in the LSZ. Within eight years following sulfate-reducing EBR dissolved
664 benzene concentrations drop and the maximum concentration of benzene predicted in the
665 UWBZ is 9.5 µg/L. By 2031, the benzene concentrations in each of the hydrostratigrapic zones
666 are predicted to be below 5 µg/L.

I also note that there was at the time of the 2014 work plan the criteria for transition from SEE to EBR implied remaining benzene concentrations would be between 100 -500 ug/l which was not met. Now they are saying that EBR will "work" with concentrations in the thousands but not sure about the timeframe.

Benzene concentrations:	100 to 500 µg/L	Concentration range where natural attenuation can complete degradation within the remedy time frame.	Benzene concentrations in extracted groundwater provide an indication of the amount of benzene remaining in the TTZ. These concentrations will be monitored against a target benzene concentration in the 100 to 500 µg/L range within the TTZ. This concentration range is predicted to achieve cleanup levels within the 20-year remedial timeframe based on modeling of groundwater contaminant attenuation outside the TTZs after active EBR (Appendix E). Benzene located around the perimeter of the TTZ and the perimeter/interior extraction wells will be evaluated for benzene concentrations to identify any perimeter influx that may mask benzene removal within the TTZ. It is expected that lower benzene concentrations within this range will be achieved in the interior of the TTZs than at the perimeter.

We will discuss this on the call tomorrow, but feel free to ask for more specifics as they go through the presentation.

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